

UNITED STATES BUREAU OF EDUCATION
BULLETIN, 1912, NO. 17

WHOLE NUMBER 489

THE MONTESSORI SYSTEM OF EDUCATION

AN EXAMINATION OF CHARACTERISTIC
FEATURES SET FORTH IN
IL METODO DELLA PEDAGOGICA SCIENTIFICA

By ANNA TOLMAN SMITH



WASHINGTON
GOVERNMENT PRINTING OFFICE
1912

CONTENTS.

	Page
Inception and development of the system.....	5
The system applied to normal children.....	9
Methods of training.....	9
The physical methods.....	10
Methods directed to mental development.....	10
Muscular coordination.....	12
Education of the senses.....	13
The tactile and thermic senses.....	14
Senses combined in training.....	15
Training of differential sense perceptions.....	15
The argument for training the senses.....	16
Rhythm.....	17
The silence interval.....	17
Preparation for writing and reading.....	18
The teacher in the Montessori system.....	21
Tests of the system.....	24
Interest in the system.....	25
Official recognition.....	26
Social mission of the system.....	27
Bibliography.....	29

THE MONTESSORI SYSTEM OF EDUCATION.

The publication of *Il metodo della pedagogica scientifica*, by Dr. Maria Montessori, docent in the University of Rome, giving a full account of the inception and development of the system of education of which she is the author and the simultaneous translation of the work into English and German are events so unusual as to challenge attention. Even before the author's exposition of the system was accessible to German and American educators in their own languages, it was the subject of sufficient interest among them to assure the commercial success of the translations, and the interest has been noticeably increased by the fuller knowledge thus attained.

The explanation of this interest is found in the new conception of social life and its regenerative forces which is stirring throughout the world. Among these forces that of education has been exalted by both scientific investigators and sociologists to a supreme position; but the word "education" is used by them in a sense differing somewhat from the formal disciplines which it generally implies, a sense indicated by the qualifying term scientific. Hence the work of Montessori, which boldly claims this distinctive quality, struck not only the right psychological moment, but the opportune moment in the movement of social reform, and thus, irrespective of its essential or permanent value, it claims the attention of all persons engaged in the work of training children or of improving human society.

Every new system bears the stamp of a personality; the element is strongly marked in this particular case by reason of the high enthusiasm of the author, and energy instinct as it were with the maternal passion, the passion for saving and upbuilding, which makes women the great conservative force in society. In the case of Dr. Montessori this energy has been directed by prolonged training in the sciences that relate to human life, and vitalized by practical experience in their application to needy and defective children. In brief, her method is the outcome of genius, training, and experience. This combination of qualities is not only certain from the testimony of her associates, but it is borne out by the first chapter of her book, which, although bearing the caption "Critical considerations," is more truly a revelation of her own sympathetic nature

and a record of reflections excited by the unnatural restraints placed upon children whom she observed.

In the opening paragraphs of this chapter Dr. Montessori says: "Scientific pedagogy has never yet been definitely constructed nor defined." This statement will find instant response in the thoughts of thousands of teachers who have followed with eager desire the rapid progress of child study in its various phases—biologic, genetic, racial, individual—a study which has awakened distrust of the older educational psychologies and philosophies. The disappointing outcome of these modern investigations is, perhaps, not to be regarded as failure, but rather proof that education is not the application of a well-reasoned and perfected theory, but an art, drawing perpetual inspiration from many sciences. The Montessori book confirms this idea. "It is not my intention," says the author, "to present a treatise on scientific pedagogy"; and again, after reference to experiments in elementary schools, based upon a study of anthropology and psychological pedagogy, she says, "the truth is that the practical progress of the school demands a genuine fusion of these modern tendencies, in practice and thought."

The new methods may then be regarded as an attempt at a fusion of hitherto disassociated tendencies. In this particular case the fusion is accomplished in the thought and effort of a single individual; but this is an incident in the inception of the movement which is intended ultimately—

to bring scientists directly into the important field of the school and at the same time raise teachers from the inferior intellectual level to which they are limited to-day.

In its present stage the work offers for consideration principally methods and material. But in their use both are supposed to correspond to the conditions of functional growth, and in this relation consists their essential value, as well as the distinctive character of the system to which they pertain. They are not only directed to special activities of childhood, but they require new equipments in schools and a new purpose in the teacher. To quote Montessori:

If we are to develop a system of scientific pedagogy, we must, then, proceed along lines very different from those which have been followed up to the present time. The transformation of the school must be contemporaneous with the preparation of the teacher. For if we make of the teacher an observer, familiar with the experimental methods, then we must make it possible for her to observe and to experiment in the school. The fundamental principle of scientific pedagogy must be, indeed, the *liberty of the pupil*.

This doctrine of liberty is not new to the educational world of the United States; it was not only formulated by Dr. Dewey, but was practically exemplified in the University Elementary School, at Chicago. The Montessori method, however, is based upon the indi-

vidual while that of the Dewey school was based upon social relations as these exist for the child either in actual experiences or living interests. The difference is great, and is readily explained by the fact that the former experiment began with defective children; that is, with children whose infirmities prevent their ready adjustment to normal society, even in the elementary form of home life. The effort with normal children sprang "from preceding pedagogical experiences with abnormal children." Dr. Montessori's observation of idiot children when she was serving as an assistant doctor at the psychiatric clinic of the University of Rome, and her desire to awaken the dormant faculties of these unfortunates, put her upon the study of the pedagogic writings of Itard and their practical development by Edward Séguin; her enthusiasm was further stimulated by the prevailing trend of thought among her medical colleagues. The conviction that pedagogy must join with medicine in the endeavor to overcome disease had led physicians to advocate the use of gymnastics in the treatment of certain ailments, such as deafness, paralysis, rickets, etc.; but in respect to this conviction Dr. Montessori says:

I, however, differed from my colleagues in that I felt that mental deficiency presented chiefly a pedagogical, rather than mainly a medical, problem.

An address embodying this idea, delivered by her in 1898 before the Pedagogical Congress at Turin, stirred a responsive chord in the minds of teachers and physicians, and brought her prominently before the minister of public instruction, Dr. Guido Baccelli. From this time her work assumed a public character. She was invited by Minister Baccelli to deliver a course of lectures to the teachers of Rome on the education of feeble-minded children; this course developed into the State Orthophrenic School, a school for backward children, which she directed for two years. Later there was founded a Medical Pedagogic Institute, in which were gathered not only feeble-minded children from the public schools, but the idiot children from the insane asylums at Rome. In the latter institution Dr. Montessori passed two years as director, teacher of children, and trainer of teachers. During this time she also visited other cities (Paris, Berlin, and London) to familiarize herself with all the methods known to remedial pedagogy. "These two years of practice," she says, "are my first, and, indeed, my true degree in pedagogy." The belief that the methods employed with deficient children "contained educational principles more rational than those in use" and that "if applied to normal children they would develop or set free their personality in a marvelous and surprising way" became with her a controlling idea. Under this conviction she not only made a systematic study of remedial pedagogy, but registered as a student of philosophy at the University of Rome, in order, as she

says, "to undertake the study of normal pedagogy and of the principles upon which it is based," This course of study was extended finally to the courses in experimental psychology, which had only recently been established in Italian universities, namely, at Turin, Rome, and Naples. The studies were supplemented by researches in pedagogic anthropology in the elementary schools, a work which led to the teaching of the subject in the University of Rome.

The Montessori method, then, like that of Froebel, may be regarded as the product of intuition and a high order of intellectual training.

In the earliest stages the experiments with defective children were intended to excite sensation and perception and to develop the power of coordinating muscular movements, in which respects the normal child is intensely active. The transition from these exercises to methods of teaching reading and writing marked, therefore, a significant stage in this developing process. The importance of this transition was fully recognized by Montessori herself. In her first reference to it she says:

I will only note that at this time I attempted an original method for the teaching of reading and writing, a part of the education of the child which was most imperfectly treated in the works of both Itard and Seguin.

The success of these methods, which enabled idiot children to pass an examination in reading and writing with normal children at a public-school examination, opened the way for the final test of the value of the methods; namely, that of their applicability to normal children.

The account of the circumstances under which this opportunity arose reads like a sequel to a chapter in Zola's *Rome*, for it was the excess of building operations graphically described by the French realist that supplied the basis for a great social reform movement in the "Eternal City." The actual purpose of the "Roman Association for Good Buildings" is not fully indicated by its name. It is a benevolent society which, under the guidance of the director general, Eduardo Talamo, is working out a comprehensive plan for the reform of the living conditions of the poor. For this purpose the association acquires city tenements, remodels them, and administers them "as a good father of a family would." A feature of the general plan is the "Children's Houses," the "case dei bambini," reserved in the tenements for the children under school age, who must be left alone during the entire day while their parents are at work. Invited by Signor Talamo to undertake the organization of "infant schools" in the model tenements of the association, Dr. Montessori found herself at the goal of her aspirations, the chance to show the general application of her pedagogical methods.

The present examination will be limited to methods that differentiate this system from others; in other words, to the methods of

promoting functional activity or autoeducation under the essential condition of the liberty of the pupil. This limitation will exclude the emotional digressions, the general discussions, and the critical reflections which make up a large part of the volume and have value for their personal revelations. The passages cited from the original work are taken from the English version, which has been approved by the author.¹

THE SYSTEM APPLIED TO NORMAL CHILDREN.

In the children's houses, where the first essay in applying this system to normal children was made, the principle of the liberty of the pupil was conditioned by strict admission regulations. The ages for admission were fixed at from 3 to 7 years. No fees were charged, but parents availing themselves of the opportunity offered pledged themselves to send their children to the "Children's House" at the appointed time clean in body and clothing, and provided with a suitable apron; to show the greatest respect and deference toward the directress and toward all persons connected with the "Children's House," and to cooperate with the directress herself in the education of the children. Once a week, at least, the mothers were permitted to talk with the directress, giving her information concerning the home life of the child, and receiving helpful advice from her.

The rules required also that children should be expelled who presented themselves unwashed or in soiled clothing, who proved to be incorrigible, whose parents failed in respect for the persons connected with the "Children's House," or who destroyed through bad conduct the educational work of the institution.

It was desired also that each child should be furnished, if possible, with a biologic record giving particulars of birth, method of feeding, sickness, etc., during early infancy; also particulars as to the parents, their occupations, and living conditions. By this aid it was believed teachers might avoid mistakes in dealing with the individual child.

METHODS OF TRAINING.

The methods of the school or "house" may be considered under two heads: Those relating to the physical state and development of the child and those relating to mental development. The two are not separate in practice, but for convenience may be separately considered.

There is a third element in the system, namely, the attitude of the teacher, which should be that of a scientific observer. Although this requirement is fundamental, its consideration may properly follow that of the methods, since these form part of the phenomena to be observed.

¹ Translated by Miss Anne E. George and published by the F. A. Stokes Pub. Co., of New York.

THE PHYSICAL METHODS.

The methods pertaining to the physical welfare of the child include, as essentials, anthropometrical measurements and medical inspection.

The measurements are of two orders: Simple measurements which, like the weight of the child, can be taken by the teachers at the time of the weekly bath; more complex measurements which require the skill of a professional expert. The duties of the latter include also periodical medical inspection; through the cooperation of teacher and physician this examination extends to the sanitary inspection of the home and to the economic conditions under which the home is maintained.

Subsidiary to the examinations by which the physical development of the child is determined are the arrangement and furnishing of the schoolrooms and grounds. These are planned to promote the principle of liberty in its spontaneous manifestations. The tables and chairs are light and easily moved, being similar in this respect to those used in the kindergarten and also in many primary schools influenced by the former. The playground and garden of the Montessori school are in direct communication with the schoolroom, so that the children may be free to go and come as they like throughout the entire day.

The use of appropriate pictures for the decoration of the children's house accords with the movement for school decoration, which within a few years has transformed the interior of many American and English schools. The experience in these countries abundantly confirms the opinion expressed by Dr. Montessori as to the effect of selected pictorial symbols in awakening the esthetic sense in young children.

METHODS DIRECTED TO MENTAL DEVELOPMENT.

In the systematic efforts for the mental development of the child the principle of liberty becomes a means of discipline. The teacher is directed to repress those activities which interfere with the collective interest.

But all the rest—every manifestation having a useful scope—whatever it be, and under whatever form it expresses itself, must not only be permitted, but must be observed by the teacher.

The arrest of spontaneous movements and the imposition of arbitrary tasks are forbidden; only useless or dangerous acts must be suppressed.

The principle of liberty is emphasized not from the social standpoint, but from the biologic. "It must be understood," the author says, "as demanding the conditions adapted to the most favorable development of his [the child's] entire individuality. * * * From

the physiological as well as from the mental side this includes the free development of the brain." It appears at once, then, that education under this system is an individual process, or, as Montessori says, "Toward single individuals, one by one observed, education must direct itself." It need hardly be said that such a conception of education can only be applied to very young children, for the impulse to associate action manifests itself early in life and is not only one of the strongest impulses in human beings, but one that has largely determined the ordinary processes of school training.

It is equally obvious that a scientific theory of education can not be established by the efforts of one individual, but the purpose has been kept in view from the time Wundt laid the foundations of experimental psychology. Dr. Montessori is the first to convert the deductions of science into formulas of training applicable to the earliest period of childhood; and, hence, irrespective of the ultimate verdict as to the soundness of her theory, the endeavor answers to a demand aroused by the psychologic and biologic researches of the past two decades.

Given, then, a small company of young children, select because of eliminative admission requirements, their physical wants carefully attended to, their freedom restrained only so far as it interferes with the general purpose, what is the process of their mental training? To what ends is it directed? By what means is it conducted? In brief, what are the *lessons* in this system?

The question is answered in a general way by the order of exercises comprised in the winter schedule of hours in the children's houses which is here reproduced.

Opening at 9 o'clock. Closing at 4 o'clock.

- 9-10. Entrance. Greeting. Inspection as to personal cleanliness. Exercises of practical life; helping one another to take off and put on the aprons. Going over the room to see that everything is dusted and in order. Language: Conversation period; children give an account of the events of the day before. Religious exercises.
- 10-11. Intellectual exercises. Objective lessons interrupted by short rest periods. Nomenclature; sense exercises.
- 11-11.30. Simple gymnastics: Ordinary movements done gracefully; normal position of the body, walking, marching in line, salutations, movements for attention, placing of objects gracefully.
- 11.30-12. Luncheon. Short prayer.
- 12-1. Free games.
- 1-2. Directed games, if possible in the open air. During this period the older children in turn go through the exercises of practical life, cleaning the room, dusting, putting the material in order. General inspection for cleanliness. Conversation.
- 2-3. Manual work. Clay modeling, design, etc.
- 3-4. Collective gymnastics and songs, if possible in the open air. Exercises to develop forethought; visiting and caring for the plants and animals.

The principal directions applicable to all the exercises are as follows: They must be individual, brief, simple, and objective. The teacher all the while is observing whether the child interests himself in the object, how he is interested in it, how long, etc., even noticing the expression of his face. And she must take great care not to offend the principles of liberty.

The following example may be taken to illustrate the method of a simple lesson:

The teacher wishes to teach a child the two colors, red and blue. She desires to attract the attention of the child to the object. She says, therefore, "Look at this." Then, in order to teach the colors, she says, showing him the red, "This is red," raising her voice a little and pronouncing the word "red" slowly and clearly; then showing him the other color, "This is blue." In order to make sure that the child has understood, she says to him, "Give me the red"; "Give me the blue." Let us suppose that the child in following this last direction makes a mistake. The teacher does not repeat and does not insist; she smiles, gives the child a friendly caress, and takes away the colors.

In this exercise are involved stimulus and reaction on the part of the child, attentive observation on the part of the teacher. However elaborate the subsequent exercises, the essential elements are the same—excitation of the sensorium, motor reaction, scientific observation. Through the repeated and simultaneous presentation of different stimuli association tracts are established in the brain centers; in other words, functional growth is promoted.

The exercises selected by Dr. Montessori are of three classes, pertaining, respectively, to (1) muscular coordination; (2) sense perception; (3) sense discrimination.

MUSCULAR COORDINATION.

To the class of muscular coordination belong the special gymnastics of the system, which are illustrated by the exercises that relate to walking. These have been carefully selected with reference to the disproportion between the limbs and the torso of a child at the age of entering the school (3 years) and the rapid growth of the limbs during the early school period.

Attention is called to the fact that if a child is not strong the erect posture and walking are really sources of fatigue for him and the long bones of the lower limbs, yielding to the weight of the body, easily become deformed and usually bowed. This is particularly the case among the badly nourished children of the poor or among those in whom the skeleton structure, while not actually showing the presence of rickets, still seems to be slow in attaining normal ossification. The tendency of the child to stretch out on his back and kick his legs in the air is an expression of physical needs related to the proportions of his body.

The principal pieces of apparatus devised or adopted by Montessori to enable children to exercise their limbs without fatigue from

the weight of the body are the fence of parallel bars supported by upright poles; a swing with a very wide seat suspended near a wall against which the child can push his feet; a pendulum which the child strikes back and forth while seated in his little armchair; a wooden stairway on the spiral plan, with a balustrade on one side and open on the other.

In addition to exercises of this nature, use is made of gymnastics without apparatus and of the free movements of games and play. Manual work and the care of plants and pet animals, which are encouraged, not only assist the muscular development, but excite instincts and emotions that pertain to the social nature; but the latter activities are not peculiar to the Montessori system. The same is true of the ingenious finger exercises and material by which children become accustomed to the movements they must make in dressing themselves, such as buttoning, lacing, tying bows, etc. These exercises illustrate the endeavor to give a practical bearing to the training wherever possible, but they are no more ingenious nor scientific than similar exercises in the modified kindergarten and in ordinary infant schools.

EDUCATION OF THE SENSES.

The education of the senses after this system presents a close analogy to the psychological experiments directed to sense measurements; but the educating process does not start from the conclusions of experimental psychology. On this point Dr. Montessori says:

The method used by me is that of making a pedagogical experiment with a didactic object and awaiting the spontaneous reaction of the child.

There is, she admits, a resemblance between the material used and psychometric material. The difference lies in this:

The esthesiometer carries within itself the possibility of measuring. My objects, on the contrary, often do not permit a measure, but are adapted to cause the child to exercise the senses.

The objects selected or invented for this purpose—the "didactic material," as it is called—are therefore as essential in this system as the gifts and plays of the kindergarten are to the symbolic system of Froebel.

The systematic education of the senses of vision and hearing is conducted in the "house of children" very much as in schools for defectives, excepting that in the former special emphasis is placed on isolating the sense to which the exercise is for the time directed, as a means of increasing its perceptive and discriminating power. The material for training vision is similar in many respects to the color schemes worked out at Teachers College, Columbia University, and also at the Chicago Kindergarten College, for use with elementary classes.

THE TACTILE AND THERMIC SENSES.

The methods and spirit of the sense training may be illustrated by the procedure in the case of the tactile and thermic senses, which have thus far received little attention excepting in the training of defectives, especially the blind and the deaf-mute.

In the introduction to this division of the subject Montessori says:

The education of the tactile and the thermic senses go together, since the warm bath, and heat in general, renders the tactile sense more acute. Since to exercise the tactile sense it is necessary to touch, bathing the hands in warm water has the additional advantage of teaching the child a principle of cleanliness—that of not touching objects with hands that are not clean. I therefore apply the general notions of practical life, regarding the washing of the hands, care of the nails, to the exercises preparatory to the discrimination of tactile stimuli.

This preliminary exercise is described as follows:

I have the child wash his hands carefully with soap, in a little basin; and in another basin I have him rinse them in a bath of tepid water. Then I show him how to dry and rub his hands gently, in this way preparing for the regular bath. I next teach the child how to touch; that is, the manner in which he should touch surfaces. For this it is necessary to take the finger of the child and to draw it very very lightly over the surface.

Another particular of the technique is to teach the child to hold his eyes closed while he touches, encouraging him to do this by telling him that he will be able to feel the differences better, and so leading him to distinguish without the help of sight the change of contact. He will quickly learn, and will show that he enjoys the exercise.

The material for the special development of the tactile sense consists "of a collection of paper slips, varying through many grades from smooth fine cardboard to coarsest sandpaper." Material designed more particularly for lessons in other subjects is also utilized in this.

For training the thermic sense, use is made of a set of little metal bowls, which are filled with water at different degrees of temperature. These are measured with a thermometer; so that there may be two containing water of the same temperature. The bowl touched from the outside gives the desired impression of heat.

For training the baric sense (sense of weight), the material consists of—

little wooden tablets, 6 by 8 centimeters, having a thickness of one-half centimeter. These tablets are in three different qualities of wood—wistaria, walnut, and pine. They weigh, respectively, 24, 18, and 12 grams, making them differ in weight by 6 grams.

These tablets should be very smooth, if possible varnished in such a way that every roughness is eliminated, so that the natural color of the wood remains. The child—

observing the color, knows that they are of different weights, and this offers a means of controlling the exercise. He takes two of the tablets in his hands,

letting them rest upon the palm at the base of his outstretched fingers. Then he moves his hands up and down in order to gauge the weight. This movement should come to be, little by little, almost insensible. * * * [The child is led] to make his distinction purely through the difference in weight, leaving out the guide of the different colors, and closing his eyes. He learns to do this of himself and takes great interest in "guessing."

SENSES COMBINED IN TRAINING.

With the training of the stereognostic sense the process enters upon a complex stage, the purpose being to stimulate the recognition of objects through the "simultaneous help of the tactile and muscular senses."

Taking this union as a basis, "the experiments," says Montessori, "have given marvelously successful educational results." The material employed is described as follows:

The first didactic material used by us is made up of the bricks and cubes of Froebel. We call the attention of the child to the form of the two solids, have him feel them carefully and accurately, with his eyes open, repeating some phrase serving to fix his attention upon the particulars of the forms presented. After this the child is told to place the cubes to the right, the bricks to the left, always feeling them, and without looking at them. Finally, the exercise is repeated by the child blindfolded. Almost all the children succeed in the exercise and after two or three times are able to eliminate every error. There are 24 of the bricks and cubes in all, so that the attention may be held for some time through this "game," but undoubtedly the child's pleasure is greatly increased by the fact of his being watched by a group of his companions, all interested and eager.

Among the educational results from this process particular mention is made of "the discovery of a remarkable functional ambidexterity" in the case of a little girl 3 years of age and the very delicate discriminations developed in the majority of children without any apparent strain on their nervous systems.

The relation of this training of the senses to psychometric experiments is obvious to all persons who have watched the development of psychophysics. Many of the experiments are the same, but they are observed and recorded from a different standpoint. So far no satisfactory results have been attained with the senses of taste and smell.

TRAINING OF DIFFERENTIAL SENSE PERCEPTIONS.

The exercises for the development of differential sense perceptions are more elaborate than those for the training of simple perception and require more varied and delicate material. It would be impossible to give in brief a fair idea of this part of the process. But to make the purpose clearer to those who may be quite unfamiliar with the idea, the description of the first exercise belonging to this series is here reproduced. This exercise pertains to the visual per-

ception of dimensions. The material employed and its use are described as follows:

First. Solid insets: This material consists of 3 solid blocks of wood, each 55 centimeters long, 6 centimeters high, and 8 centimeters wide. Each block contains 10 wooden pieces, set, into corresponding holes. These pieces are cylindrical in shape and are to be handled by means of a little wooden or brass button, which is fixed in the center of the top. The cases of cylinders are in appearance much like the cases of weights used by chemists. In the first set of the series the cylinders are all of equal height (55 millimeters) but differ in diameter. The smallest cylinder has a diameter of 1 centimeter, and the others increase in diameter at the rate of one-half centimeter. In the second set the cylinders are all of equal diameter, corresponding to half the diameter of the largest cylinder in the preceding series (27 millimeters). The cylinders in this set differ in height, the first being merely a little disk only a centimeter high; the others increase 5 millimeters each, the tenth one being 55 millimeters high. In the third set the cylinders differ both in height and diameter, the first being 1 centimeter high and 1 centimeter in diameter, and each succeeding one increasing one-half centimeter in height and diameter. With these insets the child, working by himself, learns to differentiate objects according to thickness, according to height, and according to size.

In the schoolroom these 3 sets may be played with by 3 children gathered about a table, an exchange of games adding variety. The child takes the cylinders out of the molds, mixes them upon the table, and then puts each back into its corresponding opening. These objects are made of hard pine, polished and varnished.

The range of differential perceptions includes, besides the exercise described, the following:

Differential visual perception of form and visual-tactile-muscular perceptions.
Differential visual perception of colors—education of the chromatic sense.

The discrimination of sounds.

Tests for acuteness of hearing.

The tests for hearing are supplemented by a lesson in silence. Throughout this entire range of exercises the idea of a game is maintained; the children are amused, and meanwhile there is development by a process of autoeducation.

The principle of autoeducation marks the great distinction between this system, which is based upon biologic notions, and the system of Froebel, which from first to last calls into exercise the social and ethical impulses.

THE ARGUMENT FOR TRAINING THE SENSES.

The argument for the elaborate training of the senses is epitomized in the following citations from the author's exposition of the system:

Experimental psychology has so far devoted its attention to perfecting the instruments by which the sensations are measured. No one has attempted the methodical preparation of the individual for the sensations.

Our aim in education in general is twofold—biological and social. From the biological side we wish to help the natural development of the individual; from the social standpoint it is our aim to prepare the individual for the environment. Under this last head technical education may be considered as

having a place, since it teaches the individual to make use of his surroundings. The education of the senses is more important from both these points of view. The development of the senses, indeed, precedes that of superior intellectual activity, and the child between 3 and 7 years is in the period of formation.

All education of little children must be governed by this principle—to help the natural psychic and physical development of the child.

The other aim of education (that of adapting the individual to the environment) should be given more attention later on, when the period of intense development is past.

RHYTHM.

The influence of rhythm is forced on the attention of all teachers by music, poetry, and dancing. While its presence in other forms of human activity is not so easily recognized, it must be constantly considered in a system of training based upon biologic principles. So long as the training is individual the periodicity in attention and action may escape special notice, but in collective or class exercises it is no longer negligible. The Montessori system places much less stress upon rhythm than the Froebelian games and plays, and its effects as observed in the training of muscular coordination are recorded with the enthusiasm excited by a new discovery.

I have tried (says Montessori) to have the directress of the "children's house" in Milan, who is a gifted musician, make a number of trials and experiments with a view to finding out more about the muscular capacity of young children. She has made many trials with the pianoforte, observing how the children are not sensitive to the musical tone, but only to the rhythm. On a basis of rhythm she arranged simple little dances with the intention of studying the influence of the rhythm itself upon the coordination of muscular movements. She was greatly surprised to discover the educational, disciplinary effect of such music. Her children, who had been led with great wisdom and art through liberty to a spontaneous ordering of their acts and movements, had, nevertheless, lived in the streets and courts and had an almost universal habit of jumping.

Being a faithful follower of the method of liberty, and not considering that jumping was a wrong act, she had never corrected them.

She now noticed that, as she multiplied and repeated the rhythm exercises, the children little by little left off their ugly jumping, until finally it was a thing of the past. The directress one day asked for an explanation of this change of conduct. Several little ones looked at her without saying anything. The older children gave various replies, whose meaning was the same. "It isn't nice to jump." "Jumping is ugly." "It's rude to jump."

This was certainly a beautiful triumph for our method.

This experience shows that it is possible to educate the child's muscular sense, and it shows how exquisite the refinement of this sense may be, as it develops in relation to the muscular memory, and side by side with the other forms of sensory memory.

THE SILENCE INTERVAL.

Something of the rhythmic element appears again in the intervals of silence by which the active exercises are at times interrupted. But the element is not emphasized in the elaborate accounts of

these intervals, which partake rather of the character of the sensation experiments. The silence interval may occur in the midst of different exercises, but seems to have special value in relation to tests of hearing, as indicated in the following passage:

The only entirely successful experiments which we have made so far in the "children's houses" are those of the clock and of the lowered or whispered voice. In preparing for such an exercise it is necessary to teach the children the real meaning of silence.

Toward this end I have several games of silence, which help in a surprising way to strengthen the remarkable discipline of our children.

Many of them are interested in the fact, which they have never noticed before, that we make so many noises of which we are not conscious, and that there are degrees of silence. There is an absolute silence, where nothing, absolutely nothing, moves. They watch me in amazement when I stand in the middle of the room so quietly that it is really as if "I were not." Then they strive to imitate me and to do even better. I call attention here and there to a foot that moves, almost inadvertently. The attention of the child is called to every part of his body in an anxious eagerness to attain to immobility.

When the children are trying in this way there is established a silence very different from that which we carelessly call by that name.

It seems as if life gradually vanishes and that the room becomes little by little, empty, as if there were no longer anyone in it. Then we begin to hear the tick-tock of the clock, and this sound seems to grow in intensity as the silence becomes absolute. From without, from the court which before seemed silent, there come varied noises—a bird chirps, a child passes. The children sit fascinated by that silence as if by some conquest of their own. "Here," says the directress, "here there is no longer anyone; the children have all gone away."

Whatever uses such an effort may serve in the excitation of hearing, it is evidently a means of exciting an unusual sensation, and its alternation with periods of activity is very different from the natural rhythm of physical and mental life.

PREPARATION FOR WRITING AND READING.

It is an interesting fact that while the distinctive feature of the Montessori system, the new contribution that it makes to pedagogy, consists in the processes of muscular and sense training and the principle of growth upon which these are based, the part of the system which has excited greatest interest and on which the author dwells with undisguised satisfaction, is the teaching of writing and reading.

Apart from the relation between these later processes and the fundamental principle of the system, the methods employed at this stage of the training merely add a few devices to those of other systems of instruction in these essentials which have proven very successful in their application to young children. Passing over the detailed description of the devices, which would lose much by abridgment, and the many discussions, reflections, and criticisms of other systems which they call forth, it will suffice to emphasize here the

stages of the process by which muscular dexterity and sense perception are utilized for the "spontaneous development of graphic language" and an almost insensible transition to oral speech.

The exercises preparatory to writing consist in the practice of the movements required in the art until they become mechanical, so that when the children come to the actual work of writing they may be "able to perform it without ever having directly set their hands to it before."

These preparatory exercises are classified in three periods:

To the first period belong exercises tending to develop the muscular mechanism which is actively exercised in the complex act of writing. The material employed consists of small wooden tables, metal insets, outline drawings, colored pencils. The metal insets are in dimension and form a reproduction of the series of geometric insets in wood already described. The child selects the form he desires and proceeds to outline it upon white paper with the colored pencil of his own selection. He first traces the outline of the metal case and then within this outline, that of the inset. Finally, holding the pencil as the pen is held in writing, he fills in the figure he has outlined. This exercise develops the perception of difference and likeness in forms and establishes "the muscular mechanism necessary to the management of the instrument in writing." It need hardly be said that the exercises and the material are both of a nature to interest children.

The exercises of the second period are intended to establish "the visual-muscular image of the alphabetical signs, and to establish the muscular memory of the movements necessary to writing." At the second stage letter forms cut in sandpaper and mounted on cards are introduced, and if necessary the child's finger is guided while tracing the form. The roughness of the sandpaper also guides as the child, whose tactile sense has become acute, is immediately conscious when his finger slips on to the smoother surface. The teacher precedes the tracing exercise by articulating the sound of the letter or letters which are presented for the exercise. Thus there is a simultaneous excitation of three sensations when the directress shows the letter to the child and has him trace it, the visual sensation, the tactile, and the muscular.

In this way [says Montessori] the image of the graphic sign is fixed in a much shorter space of time than when it was, according to ordinary methods, acquired only through the visual image. It will be found that the muscular memory is in the young child the most tenacious and, at the same time, the most ready. Indeed, he sometimes recognizes the letters by touching them, when he can not do so by looking at them. These images are, besides all this, contemporaneously associated with the alphabetical sound.

Exercises of the kind described may be almost indefinitely multiplied.

The third period in this process consists of exercises for the composition of words. At this stage entire alphabets are presented in boxes divided into compartments, each letter either singly or in multiples being placed in its own little section. The child having become familiar with the appearance of the letters and their sounds can quickly select those corresponding to a series of sounds representing a word, as, for instance, Ma-ma. There ensues what is to the child a very interesting game in word construction. By this process writing and reading go on together.

In the development of spoken language there are two stages which are so closely united that the distinction between them often escapes notice. Children articulate before they form words, and they speak words before they attach ideas to them. The possibility and the importance of training the vocal mechanism by exercise apart from instruction in language and its uses have long been recognized, and many admirable systems have been devised for this purpose; but as a rule young children are not trained in this respect at the age when the mechanism is most plastic.

It would be well [says Montessori] that the child, by exercising the motor channels of articulate language, should establish exactly the movements necessary to a perfect articulation before the age of easy motor adaptations is passed and, by the fixation of erroneous mechanisms, the defects become incurable.

For the purpose indicated the "analysis of speech is necessary;" but, since the analysis of the transient is impossible, the language must be made stable by the written word or graphic sign; hence, in the Montessori method the simultaneous training in graphic exercises and in vocalization and, in the third stage of writing, the analysis of words not only into signs but into the component sounds, thus combining written and oral language as parts of an integral process of development. The emphasis placed upon the integration of writing and reading and the early training of the sensory and muscular mechanism involved in both are salient points in the method of teaching language by the Montessori system. Those familiar with laboratory and clinical researches bearing upon the subject can not fail to observe the confirmation they offer for the underlying theory of the process. Thus Münsterberg, summing up a series of observations on the learning of language, spoken and written, says:

The happy days of ignorance concerning the mental processes of writing are gone, and experimental studies and clinical observations have thrown light on the extreme complexity of the task. To be sure, this disentangling of the partial processes quickly shows to what a high degree the mental and physiological acts in reading and in writing overlap. The psychological study of both processes, therefore, reinforces the conviction that they ought to be developed together. Moreover, the elaborate experiments of recent years indi-

cate that the principle of progress in both cases is essentially the same. We said that the adult person has learned to produce the speech movement for a whole word by one motor impulse, while the untrained reader must give his attention and will to practically every single letter. It may be said that this difference also controls the contrast between the writing of the beginner and of the trained writer.

Dr. Dewey, who has led the way in this country in the conversion of psychological principles into educational practice, dwells particularly upon the importance of taking advantage, in the training of a child, of the age and order of motor developments. On the subject he says:

There is an order in which sensory and motor centers develop; an order, expressed, in a general way, by saying that the line of progress is from the larger, coarser adjustments having to do with the bodily system as a whole (those nearest the trunk of the body) to the finer and accurate adjustments having to do with the periphery and extremities of the organism. To violate this order means undue nervous strain; it means putting the greatest tension upon the centers least able to do the work. At the same time the lines of activity which are hungering and thirsting for action are left unused to atrophy.

This order furnishes a criterion by which systems of motor training may be valued.

The exercises that result in spontaneous writing are in direct sequence to the child's original drawing and modeling, which are encouraged in the "children's houses" exactly as they are in the primary schools of American cities; but the practical application of these free activities to the tedious act of writing is an original contribution of the Montessori system to pedagogic method.

THE TEACHER IN THE MONTESSORI SYSTEM.

Thus far this review has considered merely the methods peculiar to the Montessori system. Naturally, ideal elements would be obscured in such a presentation; but even the author's elaborate descriptions leave the impression that she is treating of methods of training which have to do with special aptitudes or functions of the living being rather than with education as a process affecting the whole nature. This limitation in the method and material of the training is to be offset by the influence of the teacher, who occupies a new position in this system. The attempt will not be made here to explain fully the Montessori conception of the teacher's office; indeed, the author herself admits that this can not be clearly formulated but must be mastered by a special course of training. In order, however, to avoid a too partial survey of the entire subject by the exclusive consideration of exercises and material, reference must be made to the teacher, who even in the new character still remains, as in other systems, the central figure.

In the system of autoeducation, the office of the teacher is not to impart knowledge nor to correct errors. To quote Montessori on this subject:

In fact, when the child educates himself, and when the control and correction of errors is yielded to the didactic material, there remains for the teacher nothing but to observe. She must then be more of a psychologist than a teacher, and this shows the importance of a scientific preparation on the part of the teacher.

Indeed, with my methods the teacher teaches little and observes much, and, above all, it is her function to direct the psychic activity of the children and their physiological development. For this reason I have changed the name of teacher into that of directress. * * *

But her direction is much more profound and important than that which is commonly understood, for this teacher directs the life and the soul. * * *

Not upon the ability of the teacher does such education rest, but upon the didactic system. This presents objects which, first, attract the spontaneous attention of the child, and, second, contain a rational gradation of stimuli. * * *

The directresses of the "children's house" must have a clear idea of the two factors which enter into her work—the guidance of the child and the individual exercise.

Only after she has this concept clearly fixed in her mind may she proceed to the application of a method to guide the spontaneous education of the child and to impart necessary notions to him.

In the opportune quality and in the manner of this intervention lies the personal art of the educator.

Under the general head of "Intellectual education" the author explains the action of the teacher or directress in leading the child from sensations to ideas, as follows:

To this end she should use a method tending to isolate the inner attention of the child and to fix it upon the perceptions, as in the first lessons his objective attention was fixed, through isolation, upon single stimuli.

The teacher, in other words, when she gives a lesson must seek to limit the field of the child's consciousness to the object of the lesson, as, for example, during the sense education she isolated the sense which she wished the child to exercise.

It is here that the factors of individual limitation and differing degrees of perception are most keenly felt in the teacher. In other words, in the quality of this intervention lies the art which makes up the individuality of the teacher.

As an illustration of what is thus vaguely implied, the method of teaching the child "nomenclature" is described in detail. The didactic formula does not, however, differ materially from that which accompanies many courses of object lessons arranged to guide the teachers of infant schools.

Returning to the subject of the teacher in a concluding summary, after reference to an old-time teacher of noisy efforts, Montessori says:

For this teacher we have substituted the didactic material, which contains within itself the control of errors and which makes auto-education possible to

each child. The teacher has thus become a director of the spontaneous work of the children. She is not a passive force, a silent presence.

The children are occupied, each one in a different way, and the directress watching them can make psychological observations which, if collected in an orderly way and according to scientific standards, should do much toward the reconstruction of child psychology and the development of experimental psychology. I believe that I have by my method established the conditions necessary to the development of scientific pedagogy, and whoever adopts this method opens in doing so a laboratory of experimental pedagogy.

The idea of the school as a laboratory and of the teacher as a scientific investigator is not new to the teaching fraternity of the United States who, as a result of the impulse given to child study in this country by Dr. Hall 20 years ago, are more thoroughly imbued with the spirit of experimental psychology than those of any other nation. Nevertheless, the chief leaders of this movement have warned us against the endeavor to confound the teacher's art with the ardor of the scientific investigator. The question involved is put by Münsterberg as follows:

Can we feel with the child if we are in the habit of observing him as a psychological mechanism?

In answer to the query he continues:

We have reached a serious argument which psychological pedagogy has to face. From all sides we hear the cry that the teacher ought to know more psychology; but are we sure that the real success of this reform may not mean a defeat of the most important instincts in the teacher? As long as psychology means only dead textbook knowledge it can not interfere with the personal interests of parents and teachers. But if it becomes a really practical aspect, if the child and pupil is looked on as a combination of elementary mental functions and everything turns into a scientific calculation, then, indeed, too easily may the immediate personal relation of man to man suffer by it. The strong, versatile teacher may be able to combine both methods and to develop the one without injuring the other, but the average mind lives in one-sidedness. Surely society can not tolerate our training artificially the power of psychological analysis and at the same time drying up the springs of love and sympathy, of interest and enthusiasm, in the nursery and the schoolroom. The turn to psychology should be taken with carefulness and moderation, unless we are to lose more than we gain.

Similar opinions could be cited from Dr. Hall and from other leaders in psychological investigations. They are referred to in this connection not to discredit Montessori's conclusion, but to emphasize what is regarded by her as the essential to the system, namely, teachers trained in the methods and imbued with the spirit of the work. A letter written at her request by a friend and colleague says:

It is difficult for her to give any accurate information of the extension of her methods in the ordinary schools of Rome or of other countries. They are so differently applied by different teachers, and there is at present no school which is entirely under her own direction.

In some of the *Casè del Bambini* her apparatus is used, and in some of the municipal as well as in several private schools in Rome. But the teachers have only partially been trained in the system.

As interest in the system is rapidly increasing the author finds it necessary to provide for training teachers who shall become true exponents of her ideas. Accordingly, as stated in the letter quoted—she is arranging two courses for next winter, running concurrently, one for teachers of children which would be under her direction, and the other for trainers of teachers, which she would take mainly herself, to begin in November. Funds are now being raised to provide for the necessary practicing school, which will be under her own direction.

While this plan is regarded as essential, it depends upon success in securing funds and equipment.

TESTS OF THE SYSTEM.

Among the questions that naturally arise as to the results of this novel system of training, there are two of special importance, namely, the rate of progress and the general effects upon the children themselves.

From the standpoint of individual liberty, the first question may seem trifling, but experience shows that liberty even in childhood does not compensate for falling behind the rate of normal progress. The time element naturally receives little attention in the discussion of this system until formal exercises are reached. It appears then as a measure of the efficiency of the method of teaching writing. In this connection it is stated that:

The average time that elapses between the first trial of the preparatory exercises and the first written word is, for children of 4 years, from a month to a month and a half. With children of 5 years, the period is much shorter, being about a month. But one of our pupils learned to use in writing all the letters of the alphabet in 20 days. Children of 4 years, after they have been in school for 2½ months, can write any word from dictation, and can pass to writing with ink in a notebook. Our little ones are generally experts after 3 months' time, and those who have written for 6 months may be compared to the children in the third elementary. Indeed, writing is one of the easiest and most delightful of all the conquests made by the child.

As to the execution, our children write well from the moment in which they begin. The form of the letters, beautifully rounded and flowing, is surprising in its similarity to the form of the sandpaper models. The beauty of our writing is rarely equaled by any scholars in the elementary schools who have not had special exercises in penmanship.

The second question relates to conduct and the development of self-control. The claims made for the effect of this system in these respects may seem extravagant to persons who have had no experience in dealing with groups of children. But it will occasion no surprise to the experienced kindergartner, or even to the teacher of more formal infant schools. Given under any system a directress sympathetic and magnetic, who understands how to lead children in the

exercises of their natural aptitudes without restraint or force, and the effect has just the hypnotic character which is described again and again by Montessori and has been noted by impartial visitors at the children's houses.

In this atmosphere of freedom, a single occasion only is noted in which noisy manifestations called for caution. This arose from the "frenzied joy" of the children at the moment they "exploded into writing." The author says:

I saw children crowding about one another at the blackboard, and behind the little ones who were standing on the floor another line would form, consisting of children mounted upon chairs, so that they might write above the heads of the little ones. In a fury at being thwarted, other children, in order to find a little place where they might write, overturned the chairs upon which their companions were mounted. Others ran toward the window shutters or the door, covering them with writing. In these first days we walked upon a carpet of written signs. * * *

Experience has shown us how to control this phenomenon, and how to lead the child more calmly to this new power.

INTEREST IN THE SYSTEM.

The nature and extent of the interest excited by the Montessori system in Europe and in the United States are indicated by the bibliographical references appended to this review. As a rule the articles included are not written from either the scientific or the pedagogic standpoint, nor even by persons experienced in the training of the young. They simply exploit the work and the workers as wonders of the time; but although such articles may have little professional value, they are significant signs of current tendencies. A few of the authors represented in the list are scientific experts who, however, as yet are not prepared to go beyond cursory comments or descriptive accounts.

Dr. Howard C. Warren, professor of psychology in Princeton University, closes a synopsis of the system as follows:

It would be interesting to apply the Binet-Simon tests to children taught at the Houses of Childhood. The Montessori system leads to unusual attainments. Does it produce unusual functional growth as well?

The question thus pointedly put is the fundamental one in a critical estimate of a system professedly developed from biological principles.

Dr. Theodate Smith, of Clark University, in an account of the workings of the system as witnessed by her in the Montessori schools at Rome, says:

If one visits one of Dr. Montessori's schools the children all seem to be occupied in interesting play. Some are lying on the floor playing with blocks or strips of wood painted in different colors. Some are playing blindfold games, finding out by the aid of their fingers alone the shapes and sizes of

¹ Journal of Educational Psychology, March, 1912, Vol. III, No. 8, p. 182.

objects and different textures of silk, satin, wool, or linen. One child who was absorbed in writing on the blackboard did not even notice my entrance into the room. She was writing in large vertical script and forming the letters beautifully, and in answer to my question as to how long she had been writing, I learned that she had begun the day before. Occasionally some child called the teacher when he had finished his game and received either approval or a suggestion that perhaps he would like to do something else. But the interest and the attention of the children is never interfered with. If a child wishes to spend the entire school period of two hours in doing one thing he is allowed to do so on the principle that the spontaneous attention is a fundamental educational principle which must not be interfered with. In spite of the fact that this particular school in the convent on the Via Giulia draws its children from an exceedingly poor section in Rome, their appearance was neat, and although no discipline was apparent, the schoolroom was in the truest sense controlled and orderly.¹

In a letter on the subject, which we are authorized to cite, Miss Smith expresses the following decided opinion as to the value of the system:

Last June I went to Rome in a somewhat critical mood, expecting to find traces of overpressure and precocious development in the Montessori classes. I found nothing of the sort. The value of the Montessori method seems to me unquestionable if it can be introduced into the classes in the right way, but it must be in the right way to do justice to the method. There is no system that requires more careful training of its teachers.

With regard to the adaptation of the system to the training of children in the United States, she observes that—

Some adaptations will have to be made because of the difference between social conditions in the United States and Italy, nor can we expect to attain the same results in the spontaneous reading and writing which have been so striking in the Italian children, for English is not, like Italian, a phonetic language. When the Italian child has once mastered the forms and sounds of the vowels and consonants he can write any word that he knows, and has at his command a written vocabulary identical with his spoken one, and thus a new means of communication which he finds of absorbing interest.

OFFICIAL RECOGNITION

Attention has already been called to the official recognition extended to Dr. Montessori at the beginning of her work by Signor Guido Baccelli, at that time minister of public instruction for Italy, and the measures which he took to bring the new methods to the attention of teachers in the schools of Rome. Interest was also early excited in official circles of England by accounts of the system, and Mr. E. A. Holmes, formerly chief inspector of elementary schools, was sent by the British Government to investigate and report upon its operations. Mr. Holmes was already known as a champion of educational reforms and the advocate of the method

¹ Pedagogical Seminary, December, 1911, Vol. XVIII, No. 4, pp. 635-636.

of "self realization" through the early cultivation of the "expansive instincts."¹

He was, therefore, by experience and convictions able to judge of the Montessori methods and to offer, as desired, expert advice in the selection of suitable and qualified persons who should be sent to Rome for training under the author of the system, so that it may be introduced into England by competent and accredited exponents.

In the letter from Mr. Haroker, previously referred to, the statement is made that—

In the Italian-speaking Canton of Switzerland the system has been introduced [in a few infant schools] by the educational authorities, and the reports of its progress there are very favorable.

Several universities and a few States and cities of the United States have also sent representatives to Rome to study the Montessori work.

It may therefore be claimed that the system is not an isolated experiment, but a recognized contribution to that process of readjustment between life and training which science has brought about in all progressive communities.

SOCIAL MISSION OF THE SYSTEM.

In the discussions of the Montessori system it is naturally contrasted with that of Froebel, the only other system of training completely worked out in its application to early childhood. The author of the method of scientific pedagogy acknowledges indebtedness to Froebel for many of the ideas and devices which characterize the work; at the same time, by the extremely practical bearing of many of its exercises, it constantly recalls the teachings of Pestalozzi, while its scientific assumptions are current among authorities in the field of psycho-physics. The work appears, therefore, rather as an ingenious reduction of modern theories to practical uses than a new creation. This is a very valuable service, but it is a value that will be enhanced in proportion as it promotes the comparative study of systems and of experiments that pertain to the nature and potential energy of children below the school age, for, like the kindergarten, the Montessori school stops at the threshold of the normal school period. It is true that the exercises in writing, reading, and numeration overlap the province of the ordinary school, but at this stage the devices lose their unique character; they do not differ materially from devices long employed in progressive schools. The author of the system expresses, indeed, unbounded confidence that it "is but

¹ What is and what might be. A study of education in general and elementary education in particular. By Edmond Gore Alexander Holmes. London. Constable & Co. (Ltd.), 1912.

the earnest of a work that, developing the same principle and method, shall cover in a like manner the successive stages of education"; but the same confidence animated Froebel and is reiterated by his followers. Nevertheless, while the kindergarten has combined with other influences to transform the traditional spirit and methods of formal education, it has failed to overcome the force of social demands and accumulated experience which work together in shaping school processes and purposes.

The relations between the kindergarten and the "casa dei bambini" are obvious, but it is a mistake to confound either of the two with organized schools; this merely obscures their special mission in society. This fact is recognized by Dr. Montessori, who, in the discussion of her system, prefers the name of directress to that of teacher; and the same distinction is marked by Froebel's injunction, "Come, let us live with our children," implying thereby a change in the entire conception of childhood. Montessori, like Froebel, comes with a message to society, and this broad conception of her work gives it value far beyond that which attaches either to the theory or the methods of development which it sets forth.

This idea is aptly expressed by Dr. Holmes in his introduction to the American translation of *Il Metodo*, as follows:

The best use of the Montessori system in the home will come through the reading of this book. If parents shall learn from Dr. Montessori something of the value of child life, of its need for activity, of its characteristic modes of expression, and of its possibilities, and shall apply this knowledge wisely, the work of the great Italian educator will be successful enough.

In respect to the immediate applicability of the methods to elementary schools of the United States, this same authority says:

This introduction attempts to suggest a compromise. In the school arts the program used to such good effect in the Italian schools and the program which has been so well worked out in English and American schools may be profitably combined. We can learn much about writing and reading from Dr. Montessori, especially from the freedom her children have in the process of learning to write and in the use of their newly acquired power, as well as from her device for teaching them to read connected prose. We can use her materials for sense training and lead, as she does, to easy mastery of the alphabetic symbols. Our own schemes for teaching reading we can retain, and doubtless the phonetic analysis they involve we shall find easier and more effective because of our adoption of the Montessori scheme for teaching the letters. The exact adjustment of the two methods is, of course, a task for teachers in practice and for educational leaders.

To all educators this book should prove most interesting. Not many of them will expect that the Montessori method will regenerate humanity. Not many will wish to see it—or any method—produce a generation of prodigies such as those who have been heralded recently in America. Not many will approve the very early acquisition by children of the arts of reading and writing. But

all who are fair-minded will admit the genius that shines in her book and the remarkable suggestiveness of Dr. Montessori's labors.

BIBLIOGRAPHY.¹

Anderson, Mrs. J. Scott. The Montessori method of teaching hearing children. *Volta review*, 14: 154-68, June 1912.

Barrère, Jeanne. L'œuvre d'éducation et la méthode de Mme Montessori en Italie. *Revue pédagogique*, 60: 250-65, March 15, 1912.

Benumont, Edith M. The Montessori system. *South Dakota educator*, 25: 12-14, April 1912.

George, Anne E. Dr. Maria Montessori. An account of the achievements and personality of an Italian woman whose discovery is revolutionizing educational methods. *Good housekeeping magazine*, 55: 24-29, July 1912.

— The first Montessori school in America. *McClure's magazine*, 39: 177-87, June 1912.

Gesell, Arnold L. and Gesell, Beatrice Chandler. The Montessori kindergarten. In their *The normal child and primary education*. Boston, New York [etc.] Ginn and company [1912] p. 323-40.

Hallmann, W. N. A glimpse of the Montessori method. *Kindergarten-primary magazine*, 24: 261-63, June 1912.

Information about the Montessori method. *McClure's magazine*, 37: 702-704, October 1911.

Kennedy, Mary Jackson. The Montessori system. *American primary teacher*, 30: 368-69, June 1912.

Massa, Silvia. Il metodo Montessori esperimentato in una 1^a classe elementare nell' anno scolastico 1910-11. *Rivista pedagogica*, anno 5, vol. 1: 171-78, November 1911.

May, Maude G. A new method in infant education. *Journal of education* (London), 31: 645-47, September 1909.

Montessori, Maria. *Antropologia pedagogica*. Milano, F. Vailardi, [etc., etc., 1911] x, 438 p. illus. tables. 8°.

— Disciplining children. *McClure's magazine*, 39: 95-102, May 1912.

— Il metodo della pedagogica scientifica, applicato all'educazione infantile nelle case dei bambini. Castello, S. Lapò; Roma, M. Bretschneider, 1908. 283 p. plates. 4°.

— The Montessori method. Scientific pedagogy as applied to child education in "the children's houses," with additions and revisions by the author. Tr. from the Italian by Anne E. George, with an introduction by Prof. H. W. Holmes, of Harvard university. With thirty-two illustrations from photographs. New York, F. A. Stokes company, 1912. xiii, 377 p. 8°.

The Montessori method. *American education*, 15: 302, March 1912.

The Montessori method: Scientific pedagogy as applied to child education in the Children's houses. *Athenaeum*, no. 4415: 645, June 8, 1912.

Review of the English translation.

Montessori methods. *American primary teacher*, 35: 285-96, April 1912.

The Montessori school. *Northwest journal of education*, 23: 353-54, April 1912.

Montessori's rediscovery of the ten fingers. *Current literature*, 51: 380, October 1911.

Movement to revolutionize education. *Current literature*, 52: 311-14, March 1912.

¹This bibliography was prepared in the Bureau of Education.

THE MONTESSORI SYSTEM OF EDUCATION.

O'Shen, Michael V. The Montessori method of teaching. *Dial*, 52:392-94.
May 16, 1912.

Puollini, E. P. Il metodo (?) Montessori. *L'educazione dei bambini*, 23:33-34,
49-52, 65-67, 81-84, 97-101, 113-16, 129-32, 145-48. February 1 to May 16,
1911.

After the first article the title changes to "Spigolando nella pedagogia scientifica
Montessori."

Peterson, Joseph. A new emphasis on activity in education, experiments which
bear upon the age at which to start children to school. *Utah educational
review*, 5:8. March 1912.

Reedler, R. R. Montessori method of educating children. *Survey*, 27:1595-97.
January 20, 1912.

A review of the articles appearing in the May and December 1911 and January
1912 numbers of McClure's magazine.

Smith, Theodate L. Dr. Maria Montessori and her houses of childhood. *Peda-
gogical seminary*, 18: 533-42, December 1911.

— and Byoir, C. R. Montessori system; an introduction to the House of
childhood. New York, Harper and brothers, 1912. 8°.

Stevens, Ellen Yale. Montessori and Froebel—a comparison. *Elementary
school teacher*, 12: 253-58, February 1912.

— The Montessori method and primary education. *Primary education*,
20: 313-16, June 1912.

Tozier, Josephine. An educational wonder-worker: Maria Montessori's methods.
McClure's magazine, 37: 3-19, May 1911.

Also in *Fortnightly review*, 90: 309-27, August 1911.

— The Montessori apparatus. A description of the material and appa-
ratus used in teaching by the Montessori method. *McClure's magazine*, 38:
280-302, January 1912. Illus.

— Montessori schools in Rome. *McClure's magazine*, 38: 122-37, Decem-
ber 1911.

Valle, Guido della. Le "Casa del bambini" e la "Pedagogia scientifica" di
M. Montessori. *Rivista pedagogica*, anno 4, vol. 2: 67-80, January 1911.

Warren, Howard C. The "house of childhood": a new primary system.
Journal of educational psychology, 3: 121-32, March 1912.

Williams, L. A. Estimate of the Montessori system of child training. *New
York teachers monographs*, 14: 25-32, June 1912.

Winship, A. E. Montessori methods. *Journal of education* (Boston), 75: 390-
400, April 11, 1912.

Witmer, Lightner. A caution on Montessori. *Journal of education* (Boston),
76: 30, July 4, 1912.

Woman as child trainer. *Maria Montessori's houses of childhood in Italy*.
Evening post (New York) January 22, 1912.

Contains: Keeping up with to-day—The new education—Liberating the person-
ality and educating the senses of little children—How the youngsters "explode into
writing."